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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,795

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Eric Girvan Roche

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CHICAGO, IL 60610

EXAMINER

BOS, STEVEN J

ART UNIT	PAPER NUMBER
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1754

MAIL DATE	DELIVERY MODE
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09/20/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/531,795

Applicant(s)

ROCHE ET AL.

Examiner

Steven Bos

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7-23-2007</u> . | 6) <input type="checkbox"/> Other: _____ |

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis '418.

Davis teaches the instantly claimed sulfate process but may differ in that a further leach step of leaching the residual solid phase from step (b) with a sulfuric acid solution to form titanyl sulfate and iron sulfate solution and a residual solid phase, separating the leach liquor and supplying the separated leach liquor to leach step (a) and/or mixing the separated leach liquor with the leach liquor from step (b).

However the taught unreacted ilmenite ore appears to be equivalent to the instantly claimed residual solid phase because when the ilmenite is not digested it will be "unreacted" ie. undigested or undissolved, which will leave the ilmenite ore, which is a solid material, in the form of a residual solid phase. The taught recycling of the unreacted ilmenite ore into the digester appears to meet the instantly claimed further leach step and forming titanyl sulfate and iron sulfate. The taught spent acid (27) that is recycled to the first digester (10) would appear to meet the instantly claimed supplying separated leach liquor to the leach step (a). The taught separation of leach liquor and unreacted ilmenite in separator (13) and (16) would appear to meet the instantly claimed mixing the separated leach liquor with the leach liquor from step (b).

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to select the portion of the prior art's range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results, see *In re Boesch*, 205 USPQ 215.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping

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portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 USPQ 549.

Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis '418 as applied to claims 1-24 above, and further in view of Rahm '415.

Davis differs in that all the instantly claimed additives or reductants may not be stated.

Rahm teaches a similar process as Davis and teaches the use of all the instantly claimed additives and reductants. See col. 7.

It would have been obvious to one skilled in the art to use the taught additives and reductants of Rahm in Davis because each of these references is directed to the same process.

Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis '418 as applied to claims 1-24 above, and further in view of Watanabe '816.

Davis differs in that solvent extraction of titanyl sulfate may not be stated.

Watanabe teaches a similar process as Davis and teaches the solvent extraction of titanyl sulfate which avoids discharge of waste acid. See cols. 4-8.

It would have been obvious to one skilled in the art to solvent extract titanyl sulfate in the process of Davis because this avoids discharge of waste acid.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

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and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-28 of copending Application No. 10/531804. Although the conflicting claims are not identical, they are not patentably distinct from each other because they overlap in scope of subject matter claimed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/531784. Although the conflicting claims are not identical,

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they are not patentably distinct from each other because they overlap in scope of subject matter claimed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-41 of copending Application No. 11/107687 in view of Watanabe '816. Watanabe teaches a similar process as SN '687 and teaches the solvent extraction of titanyl sulfate which avoids discharge of waste acid. See cols. 4-8.

It would have been obvious to one skilled in the art to solvent extract titanyl sulfate in the process of SN '687 because this avoids discharge of waste acid.

This is a provisional obviousness-type double patenting rejection.

Applicant's arguments filed August 15, 2007 have been fully considered but they are not persuasive.

Applicant argues that Davis removes iron sulfate from the solution of iron sulfate and titanyl sulfate to provide a solution of titanyl sulfate which is retained in the leach liquor whereas the instant claims require separating titanyl sulfate from the leach liquor.

However the effect of each of the taught process and that instantly claimed is the same, to isolate titanyl sulfate from iron sulfate so that the titanyl sulfate can be hydrolyzed, without the iron sulfate, to titanium dioxide hydrate. No patentable

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distinction is seen nor have any unexpected results been shown. It is noted that in the instantly disclosed separation of titanyl sulfate by solvent extraction a solution of titanyl sulfate is formed which is then hydrolyzed (instant pg. 8, lines 15-21). This is exactly what Davis hydrolyzes, ie. a titanyl sulfate solution. Again no patentable distinction is seen nor have any unexpected results been shown.

Applicant argues that the stated premise of the motivation to combine Davis and Watanabe is false and that in fact Davis already avoids discharge of waste acid.

However Davis states that his process is free or substantially free of waste spent acid. Therefore there is still room for improvement of the waste spent acid discharge problem because "substantially free" means that there is still some waste acid discharge. Furthermore, Watanabe teaches that his process discharges no industrial waste (col. 1, lines 5-10) which is an improvement on the process of Davis.

The case law to Boesch is relevant to instant claims 6-11,16,22,24.

The case law to Malagari is relevant to instant claims 8-11,16,22.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

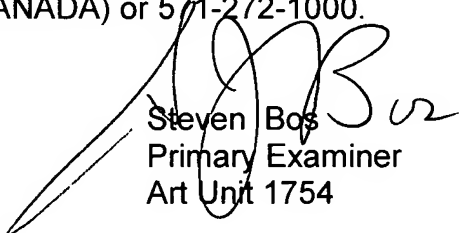
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Bos whose telephone number is 571-272-1350. The examiner can normally be reached on M-F, 9AM to 6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stan Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Steven Bos
Primary Examiner
Art Unit 1754

sjb